



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
**OFFICE OF RADIATION AND INDOOR AIR**  
National Air and Radiation Environmental Laboratory  
540 South Morris Avenue, Montgomery, AL 36115-2601  
(334) 270-3400

April 23, 2012

**MEMORANDUM**

**SUBJECT:** Radiochemical Results for  
Dimock Residential Groundwater Site Samples

**FROM:** Cindy White, Acting Director *Cindy White*  
Center for Environmental Radioanalytical Laboratory Science

**TO:** Fred Foreman, Chief  
Technical Services, Region 3

Attached is a data package for thorium analysis of samples collected from the Dimock Residential Groundwater Site in Dimock, PA. The samples constitute NAREL batch number 1200002.

Radiochemical analyses usually require the subtraction of an instrument background measurement from a gross sample measurement. Both values are positive, but when the sample activity is low, random variations in the two measurements can cause the gross value to be less than the background, resulting in a measured activity less than zero. Although negative activities have no physical significance, they do have statistical significance, as for example in the evaluation of trends or the comparison of two groups of samples.

For all analyses, it is the policy of NAREL to report results as generated, whether positive, negative, or zero, together with the 2-sigma measurement uncertainty and a sample-specific estimate of the minimum detectable concentration (MDC). The activity, uncertainty, and MDC are given in the same units.

Specific information concerning all aspects of the radiological analysis of the samples is contained in the batch case narratives of the data packages. If you have any questions concerning the analytical results, please contact me at (334)270-7052.

Attachments

cc: John G. Griggs, NAREL

**U.S. ENVIRONMENTAL PROTECTION AGENCY  
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY  
540 S. MORRIS AVE., MONTGOMERY, AL 36115  
TH ANALYSES**

**REPORT OF SAMPLE DELIVERY GROUP #1200002**

Project: Dimock Residential GW Site, Dimock, PA  
Analysis method: Actinides (Thorium) by Extraction Chromatography  
Report ID: 1200002-TH  
Report type: Original  
Date reported: 04/19/2012  
Total pages in report: 21

**SAMPLES**

NAREL Sample #	Client Sample ID	Location	Matrix	Date Collected	Date Received
B2.02559T	FB19	PA:DIMOCK	WATER-DRINKING	03/05/2012	03/07/2012
B2.02560K	HW56	PA:DIMOCK	WATER-DRINKING	03/05/2012	03/07/2012
B2.02561L	HW60	PA:DIMOCK	WATER-DRINKING	03/05/2012	03/07/2012
B2.02617K	FB20	PA:DIMOCK	WATER-DRINKING	03/06/2012	03/08/2012
B2.02618L	HW61	PA:DIMOCK	WATER-DRINKING	03/06/2012	03/08/2012
B2.02619M	HW61Z	PA:DIMOCK	WATER-DRINKING	03/06/2012	03/08/2012
B2.02675W	FB21	PA:DIMOCK	WATER-DRINKING	03/08/2012	03/09/2012
B2.02676X	HW50	PA:DIMOCK	WATER-DRINKING	03/08/2012	03/09/2012

**EXCEPTIONS**

1. **Packaging and shipping** – No problems were observed.
2. **Documentation** – No problems were observed.
3. **Sample preparation** – No problems were encountered.
4. **Analysis** – The samples in this SDG were reanalyzed as a result of a laboratory duplicate failure. The results of the reanalyses are reported in this data package.
5. **Holding times** – No holding times were specified.

**QUALITY CONTROL**

1. **QC samples** – All QC analysis results met NAREL acceptance criteria except the LCS result which was slightly above the upper warning criterion.
2. **Yields** – All chemical yields were within acceptance limits.
3. **Instruments** – Response and background checks for all instruments used in these analyses met NAREL acceptance criteria.

## CERTIFICATION

I certify that this data report complies with the terms and conditions of the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Director of the Center for Environmental Radioanalytical Laboratory Science and the NAREL Quality Assurance Manager, or their designees, as verified by the following signatures.

Mary Wisdom  
Mary F. Wisdom  
Quality Assurance Manager, NAREL

4-23-12  
Date

*for* Guthrie White (Acting CERLS Dir)  
John G. Griggs, Ph.D.  
Director, Center for Environmental Radioanalytical  
Laboratory Science

4-23-12  
Date

## GENERAL INFORMATION

### SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

### ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample (blank spike)
MS	Matrix spike
MSD	Matrix spike duplicate
RBK	Method blank

### QUALITY INDICATORS

RPD	Relative Percent Difference
%R	Percent Recovery
Z	Number of standard deviations by which a QC measurement differs from the expected value

### EVALUATION OF QC ANALYSES

A method blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "Z scores." A Z score is the number of standard deviations by which the QC result differs from its ideal value. The score is considered acceptable if its absolute value is not greater than 3.

The Z score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference.

The Z score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference. When the precision of paired MS/MSD analyses is evaluated, the native sample activity is subtracted from each measured value and the net concentrations are then converted to total activities before the Z score is computed.

Each standard uncertainty used to compute a Z score includes an additional fixed term to represent sources of measurement error other than counting error. This additional term is not used in the evaluation of reagent blanks.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation.

**U.S. ENVIRONMENTAL PROTECTION AGENCY  
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

**SDG #1200002**

**ANALYSIS SUMMARY**

Analysis Procedure: NAREL TH-EICHROM  
Title: Actinides (Thorium) by Extraction Chromatography

NAREL Sample #	QC Type	Preparation Procedure	Date Completed	Assay Batch #	QC Batch #
B2.02559T	DUP	N/A	04/18/2012	0015899H	0008652H
B2.02560K		N/A	04/18/2012	0015899H	0008652H
B2.02561L		N/A	04/18/2012	0015899H	0008652H
B2.02561L		N/A	04/18/2012	0015899H	0008652H
B2.02617K		N/A	04/18/2012	0015899H	0008652H
B2.02618L		N/A	04/18/2012	0015899H	0008652H
B2.02619M		N/A	04/18/2012	0015899H	0008652H
B2.02675W		N/A	04/18/2012	0015899H	0008652H
B2.02676X		N/A	04/18/2012	0015899H	0008652H
LCS-00635836R *	LCS	N/A	04/18/2012	0015899H	0008652H
RBK-00635835Q *	RBK	N/A	04/18/2012	0015899H	0008652H

\* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

**PREPARATION METHOD(S) USED**

Procedure ID	Title

**U.S. ENVIRONMENTAL PROTECTION AGENCY  
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

**SDG #1200002**

**SAMPLE ANALYSIS REPORT**

Sample #:	B2.02559T	QC batch #:	0008652H
Matrix:	WATER-DRINKING	Assay batch #:	0015899H
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.500e-01 L	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	N/A	Analyst:	AS
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	Aqueous		

**COUNTING INFORMATION**

Date and time	Duration (min)	Detector ID	Operator
04/17/2012 15:43	1000.0	AS73	RCL

**ANALYTICAL RESULTS**

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	-1.21e-02	4.2e-02	1.2e-01	PCI/L	04/17/2012 10:00 CDT
Th228	-3.37e-03	5.7e-02	1.2e-01	PCI/L	04/17/2012 10:00 CDT
Th230	1.15e-01	7.8e-02	8.4e-02	PCI/L	04/17/2012 10:00 CDT
Th232	-3.37e-03	4.0e-02	9.3e-02	PCI/L	04/17/2012 10:00 CDT

**U.S. ENVIRONMENTAL PROTECTION AGENCY  
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

**SDG #1200002**

**SAMPLE ANALYSIS REPORT**

Sample #:	B2.02560K	QC batch #:	0008652H
Matrix:	WATER-DRINKING	Assay batch #:	0015899H
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.500e-01 L	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	N/A	Analyst:	AS
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

**COUNTING INFORMATION**

Date and time	Duration (min)	Detector ID	Operator
04/17/2012 15:43	1000.0	AS74	RCL

**ANALYTICAL RESULTS**

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	3.03e-02	6.5e-02	1.0e-01	PCI/L	04/17/2012 10:00 CDT
Th228	0.00e+00	3.2e-02	7.3e-02	PCI/L	04/17/2012 10:00 CDT
Th230	8.15e-02	6.6e-02	7.3e-02	PCI/L	04/17/2012 10:00 CDT
Th232	3.39e-03	3.9e-02	8.4e-02	PCI/L	04/17/2012 10:00 CDT

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**SDG #1200002**

**SAMPLE ANALYSIS REPORT**

Sample #:	B2.02561L	QC batch #:	0008652H
Matrix:	WATER-DRINKING	Assay batch #:	0015899H
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.500e-01 L	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	N/A	Analyst:	AS
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

**COUNTING INFORMATION**

Date and time	Duration (min)	Detector ID	Operator
04/17/2012 15:43	1000.0	AS77	RCL

**ANALYTICAL RESULTS**

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	0.00e+00	4.8e-02	9.8e-02	PCI/L	04/17/2012 10:00 CDT
Th228	4.22e-02	6.5e-02	1.0e-01	PCI/L	04/17/2012 10:00 CDT
Th230	2.54e-02	6.8e-02	1.3e-01	PCI/L	04/17/2012 10:00 CDT
Th232	5.49e-02	6.4e-02	8.3e-02	PCI/L	04/17/2012 10:00 CDT



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**SDG #1200002**

**SAMPLE ANALYSIS REPORT**

Sample #:	B2.02561L	QC batch #:	0008652H
Matrix:	WATER-DRINKING	Assay batch #:	0015899H
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.500e-01 L	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	N/A	Analyst:	AS
Ash/dry weight:	N/A	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

**COUNTING INFORMATION**

Date and time	Duration (min)	Detector ID	Operator
04/17/2012 15:43	1000.0	AS80	RCL

**ANALYTICAL RESULTS**

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	0.00e+00	5.6e-02	1.3e-01	PCI/L	04/17/2012 10:00 CDT
Th228	6.70e-03	6.0e-02	1.2e-01	PCI/L	04/17/2012 10:00 CDT
Th230	2.35e-02	4.2e-02	6.6e-02	PCI/L	04/17/2012 10:00 CDT
Th232	-1.00e-02	2.4e-02	7.2e-02	PCI/L	04/17/2012 10:00 CDT

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**SDG #1200002**

**SAMPLE ANALYSIS REPORT**

Sample #:	B2.02617K	QC batch #:	0008652H
Matrix:	WATER-DRINKING	Assay batch #:	0015899H
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.500e-01 L	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	N/A	Analyst:	AS
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	Aqueous		

**COUNTING INFORMATION**

Date and time	Duration (min)	Detector ID	Operator
04/17/2012 15:43	1000.0	AS81	RCL

**ANALYTICAL RESULTS**

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	-1.45e-02	5.0e-02	1.4e-01	PCI/L	04/17/2012 10:00 CDT
Th228	2.02e-02	6.5e-02	1.2e-01	PCI/L	04/17/2012 10:00 CDT
Th230	6.89e-02	6.5e-02	7.0e-02	PCI/L	04/17/2012 10:00 CDT
Th232	1.62e-02	4.4e-02	8.0e-02	PCI/L	04/17/2012 10:00 CDT

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**SDG #1200002**

**SAMPLE ANALYSIS REPORT**

Sample #:	B2.02618L	QC batch #:	0008652H
Matrix:	WATER-DRINKING	Assay batch #:	0015899H
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.500e-01 L	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	N/A	Analyst:	AS
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

**COUNTING INFORMATION**

Date and time	Duration (min)	Detector ID	Operator
04/17/2012 15:43	1000.0	AS82	RCL

**ANALYTICAL RESULTS**

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	-7.91e-03	5.2e-02	1.4e-01	PCI/L	04/17/2012 10:00 CDT
Th228	-1.77e-02	5.5e-02	1.4e-01	PCI/L	04/17/2012 10:00 CDT
Th230	9.31e-02	7.6e-02	5.7e-02	PCI/L	04/17/2012 10:00 CDT
Th232	2.65e-02	4.7e-02	5.7e-02	PCI/L	04/17/2012 10:00 CDT

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**SDG #1200002**

**SAMPLE ANALYSIS REPORT**

Sample #:	B2.02619M	QC batch #:	0008652H
Matrix:	WATER-DRINKING	Assay batch #:	0015899H
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.500e-01 L	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	N/A	Analyst:	AS
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

**COUNTING INFORMATION**

Date and time	Duration (min)	Detector ID	Operator
04/17/2012 15:43	1000.0	AS83	RCL

**ANALYTICAL RESULTS**

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	-6.96e-03	4.6e-02	1.2e-01	PCI/L	04/17/2012 10:00 CDT
Th228	1.17e-02	5.1e-02	1.0e-01	PCI/L	04/17/2012 10:00 CDT
Th230	7.80e-03	3.5e-02	6.7e-02	PCI/L	04/17/2012 10:00 CDT
Th232	2.73e-02	4.9e-02	7.7e-02	PCI/L	04/17/2012 10:00 CDT

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**SDG #1200002**

**SAMPLE ANALYSIS REPORT**

Sample #:	B2.02675W	QC batch #:	0008652H
Matrix:	WATER-DRINKING	Assay batch #:	0015899H
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.500e-01 L	Analysis procedure:	NAREL TH-EICHRON
Dry/wet weight:	N/A	Analyst:	AS
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	Aqueous		

**COUNTING INFORMATION**

Date and time	Duration (min)	Detector ID	Operator
04/17/2012 15:43	1000.0	AS84	RCL

**ANALYTICAL RESULTS**

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	2.19e-02	6.4e-02	9.5e-02	PCI/L	04/17/2012 10:00 CDT
Th228	8.19e-03	5.4e-02	1.1e-01	PCI/L	04/17/2012 10:00 CDT
Th230	9.02e-02	7.5e-02	8.1e-02	PCI/L	04/17/2012 10:00 CDT
Th232	4.91e-02	5.6e-02	5.3e-02	PCI/L	04/17/2012 10:00 CDT

**U.S. ENVIRONMENTAL PROTECTION AGENCY  
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

**SDG #1200002**

**SAMPLE ANALYSIS REPORT**

Sample #:	B2.02676X	QC batch #:	0008652H
Matrix:	WATER-DRINKING	Assay batch #:	0015899H
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.500e-01 L	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	N/A	Analyst:	AS
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

**COUNTING INFORMATION**

Date and time	Duration (min)	Detector ID	Operator
04/17/2012 15:43	1000.0	AS85	RCL

**ANALYTICAL RESULTS**

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	2.35e-02	6.8e-02	1.0e-01	PCI/L	04/17/2012 10:00 CDT
Th228	-2.19e-02	3.4e-02	1.1e-01	PCI/L	04/17/2012 10:00 CDT
Th230	5.70e-02	6.6e-02	8.6e-02	PCI/L	04/17/2012 10:00 CDT
Th232	8.75e-03	3.9e-02	7.5e-02	PCI/L	04/17/2012 10:00 CDT

**U.S. ENVIRONMENTAL PROTECTION AGENCY  
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

**SDG #1200002**

**SAMPLE ANALYSIS REPORT**

Sample #:	LCS-00635836R	QC batch #:	0008652H
Matrix:	N/A	Assay batch #:	0015899H
Sample type:	N/A	Prep procedure:	N/A
Amount analyzed:	1.000e+00 SAMP	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	N/A	Analyst:	AS
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

**COUNTING INFORMATION**

Date and time	Duration (min)	Detector ID	Operator
04/17/2012 15:43	1000.0	AS86	RCL

**ANALYTICAL RESULTS**

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	0.00e+00	1.2e-02	2.4e-02	PCI	04/17/2012 10:00 CDT
Th228	5.17e-03	1.7e-02	3.2e-02	PCI	04/17/2012 10:00 CDT
Th230	2.88e+00	2.2e-01	1.3e-02	PCI	04/17/2012 10:00 CDT
Th232	1.24e-02	1.4e-02	1.3e-02	PCI	04/17/2012 10:00 CDT

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NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

**SDG #1200002**

**SAMPLE ANALYSIS REPORT**

Sample #:	RBK-00635835Q	QC batch #:	0008652H
Matrix:	N/A	Assay batch #:	0015899H
Sample type:	N/A	Prep procedure:	N/A
Amount analyzed:	1.000e+00 SAMP	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	N/A	Analyst:	AS
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

**COUNTING INFORMATION**

Date and time	Duration (min)	Detector ID	Operator
04/17/2012 15:43	1000.0	AS87	RCL

**ANALYTICAL RESULTS**

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	-3.49e-03	1.2e-02	3.4e-02	PCI	04/17/2012 10:00 CDT
Th228	9.78e-03	1.5e-02	2.4e-02	PCI	04/17/2012 10:00 CDT
Th230	1.17e-02	1.5e-02	2.1e-02	PCI	04/17/2012 10:00 CDT
Th232	8.80e-03	1.2e-02	1.3e-02	PCI	04/17/2012 10:00 CDT



**U.S. ENVIRONMENTAL PROTECTION AGENCY  
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

**SDG 1200002**

**QC BATCH SUMMARY**

QC batch #: 0008652H  
Preparation procedure: N/A  
Analysis procedure: NAREL TH-EICHROM

NAREL Sample #	QC Type	Yield (%)	$\pm 2 \sigma$ Uncertainty (%)	Analyst
B2.02559T	DUP	92.46 %	2.47 %	AS
B2.02560K		90.62 %	2.45 %	AS
B2.02561L		89.99 %	2.39 %	AS
B2.02561L		90.28 %	2.41 %	AS
B2.02617K		93.55 %	2.51 %	AS
B2.02618L		86.41 %	2.32 %	AS
B2.02619M		98.02 %	2.57 %	AS
B2.02675W		93.65 %	2.49 %	AS
B2.02676X		89.63 %	2.39 %	AS
LCS-00635836R *	LCS	95.81 %	2.52 %	AS
RBK-00635835Q *	RBK	98.05 %	2.59 %	AS

\* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

National Air and Radiation Environmental Laboratory  
QC Batch Report

QC Batch #: 0008652H

Analytical Method: NAREL TH-RICHROM

METHOD BLANKS (PCI)

Sample ID	Nuclide	Activity $\pm 2\sigma$	Prep Date	Flags
00635835Q	TH227	$-3.49\text{e-}03 \pm 1.2\text{e-}02$	2012-04-17	OK
00635835Q	TH228	$9.78\text{e-}03 \pm 1.5\text{e-}02$	2012-04-17	OK
00635835Q	TH230	$1.17\text{e-}02 \pm 1.5\text{e-}02$	2012-04-17	OK
00635835Q	TH232	$8.80\text{e-}03 \pm 1.2\text{e-}02$	2012-04-17	OK

LABORATORY DUPLICATES (PCI/L)

Sample ID	Nuclide	Original $\pm 2\sigma$	Duplicate $\pm 2\sigma$	RPD	Z
B2.02561L	TH227	$0.00\text{e+}00 \pm 4.8\text{e-}02$	$0.00\text{e+}00 \pm 5.6\text{e-}02$	0.00	0.00 OK
B2.02561L	TH228	$4.22\text{e-}02 \pm 6.5\text{e-}02$	$6.70\text{e-}03 \pm 6.0\text{e-}02$	145.25	-0.80 OK
B2.02561L	TH230	$2.54\text{e-}02 \pm 6.8\text{e-}02$	$2.35\text{e-}02 \pm 4.2\text{e-}02$	7.79	-0.05 OK
B2.02561L	TH232	$5.49\text{e-}02 \pm 6.4\text{e-}02$	$-1.00\text{e-}02 \pm 2.4\text{e-}02$	289.58	-1.90 OK

LAB CONTROL SAMPLES (PCI)

Sample ID	Nuclide	Amt Added $\pm 2\sigma$	Measured $\pm 2\sigma$	%R	Z
00635836R	TH227	NO SPIKE DATA			
00635836R	TH228	NO SPIKE DATA			
00635836R	TH230	$2.54\text{e+}00 \pm 2.2\%$	$2.88\text{e+}00 \pm 2.2\text{e-}01$	113.68	3.01 HIGH
00635836R	TH232	NO SPIKE DATA			

Analyst:

QA Officer:

*LC5 failed - barely. Rom 4/18/12*

Method Blanks

Analyte: TH227

Method: NAREL TH-EICHRUM

Analyst: Smith, Albert

Report: 1200002-TH



Method Blanks  
 Analyte: TH228  
 Method: NAREL TH-EICHROM  
 Analyst: Smith, Albert



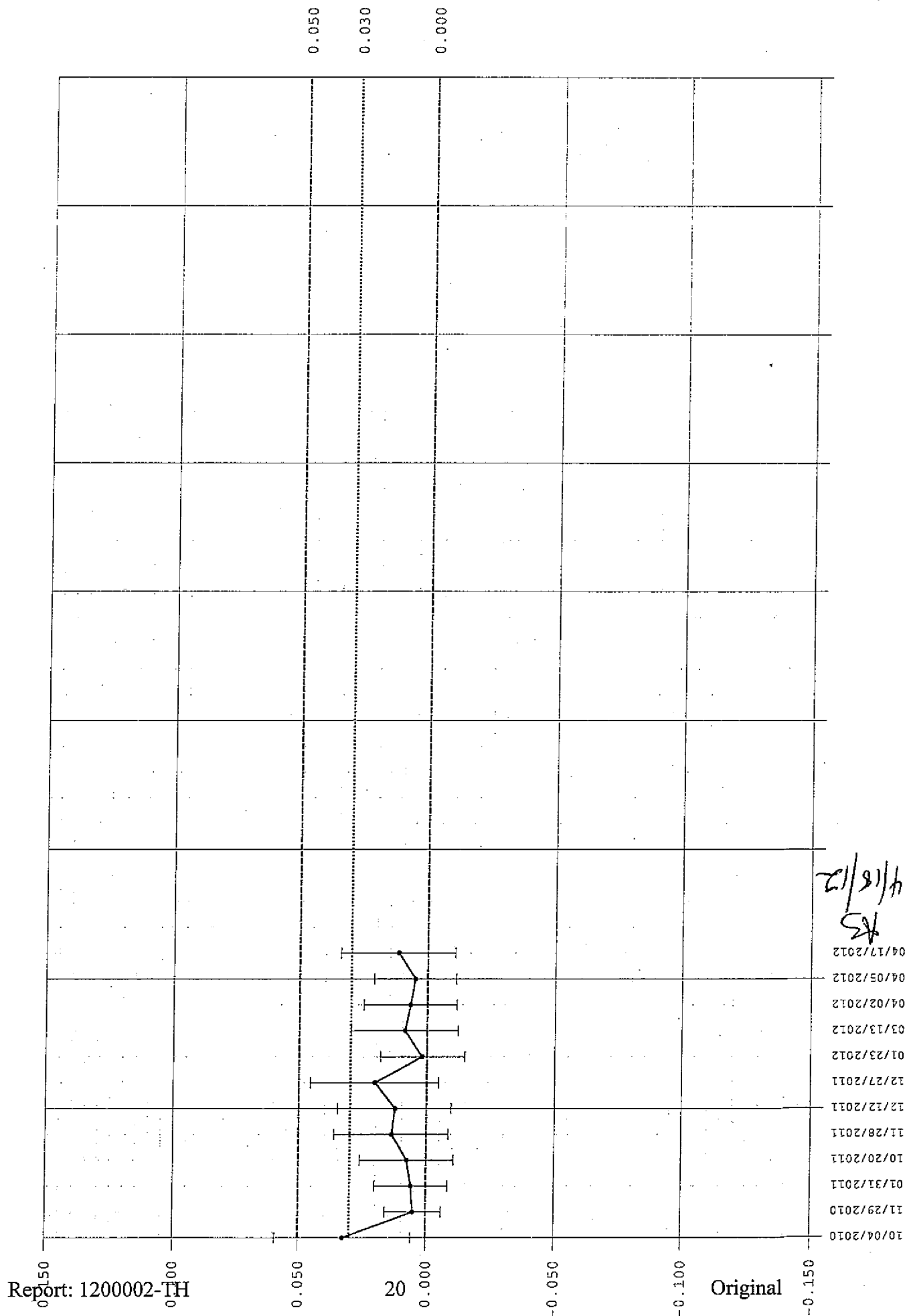
Method Blanks

Analyte: TH230

Method: NAREL TH-EICHROM

Analyst: Smith, Albert

Report: 1200002-TH



Method Blanks

Analyte: TH232

Method: NAREL TH-EICHROM

Analyst: Smith, Albert

